

# PATENT ABSTRACTS OF JAPAN

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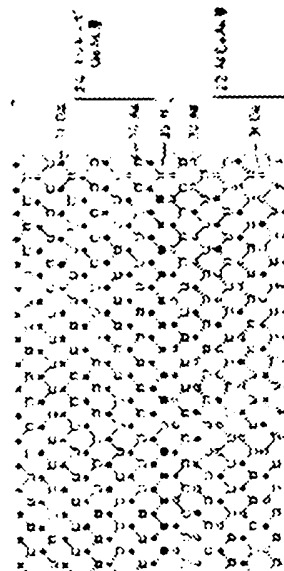
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## (54) EPITAXIAL CRYSTAL

### (57)Abstract:

**PURPOSE:** To produce a crystal layer which is free from mutual diffusion and has a multilayered structure in excellent reproducibility by making the following As atomic layer an atomic layer contg. N atom wherein both a GaAs layer constituting epitaxial crystal of the multilayered structure and an AlGaAs layer are bonded.

**CONSTITUTION:** In an ultralattice layer consisting of epitaxial crystal of a multilayered structure wherein a GaAs layer 24 and an AlGaAs layer 22 are alternately superimposed, an As 34 layer in which the above-mentioned GaAs layer 24 and AlGaAs layer (Al composition  $X \neq 0$ ) 22 are bonded is made to an atomic layer contg. N atom 35. Thereby the turbulence of a structure based on mutual diffusion is prevented and the ultralattice layer can be formed at about 700° C high temp. in excellent reproducibility and the heat-treatment at about 800° C is enabled. The above-mentioned N atom layer is inserted and formed by introducing NH<sub>3</sub>, N<sub>2</sub>, N<sub>2</sub>H<sub>4</sub>, etc., in the process of epitaxial growth.



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